

### **REMARKS**

Please amend claims 58 and 81 as indicated in the listing of claims. Please cancel claims 69-71 without prejudice or disclaimer. Subsequent to the entry of this amendment, claims 58 and 80-82 will be pending and at issue. These amendments and additions add no new matter as the claim language is fully supported by the specification and original claims.

Applicant submits that the pending claims are in condition for allowance, and respectfully requests that the claims as amended be entered.

### **Rejection under 35 U.S.C. §102(e)**

Applicants respectfully traverse the rejection of claims 58 and 69 under 35 U.S.C. §102(e), as allegedly being anticipated by Vigne et al. (U.S. Patent No. 6,911,199). As claim 69 has been canceled, the rejection as applied to this claim is rendered moot. To anticipate, a single reference must inherently or expressly teach each and every element of claimed invention. *In re Spada*, 15 USPQ2d 1655 (Fed Cir. 1990); and *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). MPEP § 2131.

The Office Action alleges, in pertinent part, that Vigne teaches “targeted adenovirus vectors for delivery of heterologous genes, wherein modifications of the internal sites of the adenovirus fiber protein that include short targeting peptides fused to the C-terminus of the fiber protein, or the fiber HI loop (knob) target the modified adenoparticles to specific cell types,” citing the title and abstract (Office Action at p. 3). The Action further alleges that Vigne teaches that the fiber protein may be modified to have a shorter shaft or may be replaced with the shaft of another serotype. However, Vigne does not teach or suggest a modified adenovirus fiber in which modification is a mutation, insertion or replacement of at least one amino acid in a fiber shaft  $\beta$ -repeat corresponding to the last full  $\beta$  repeat, and wherein the fiber further comprises a modification in the AB loop or the CD loop of the fiber knob, wherein the fiber knob modification is selected from the group consisting of K01 and K012, whereby binding of the modified fiber to CAR is reduced, as required by amended claim 58.

As stated in *Hybritech Inc. v. Monoclonal Antibody, Inc.*, 231 U.S.P.Q. 81 (Fed. Cir. 1986), “It is axiomatic that for prior art to anticipate under 102 it has to meet every element of the claimed invention.” Therefore, because the claim 58 recites elements which are not taught or suggested in Vigne, the reference does not anticipate the claimed invention. Failure of the prior art to meet every element of the claimed invention does not meet the standard under §102. For these reasons, Applicants respectfully request that the rejection be withdrawn.

**Rejection under 35 U.S.C. §103(a)**

Claims 58 and 69-70 stand rejected under 35 U.S.C. §103(a), as allegedly being unpatentable over Vigne *et al.*, (supra) in view of Wickham *et al.* (US Patent No. 6,455,314). As claims 69-70 have been canceled, the rejection as applied to these claim is rendered moot. Applicants traverse the rejection as it applies to the pending amended claim.

The Office Action alleges that that Vigne teaches modification of the fiber knob in the HI loop. (Office Action at p. 5.) The Action further alleges that Wickham et al. describe adenoviral vectors that contain modifications in the Ad5 fiber knob” with mutations “located in the AB loop, CD loop or HI loop that result in reducing CAR native receptor affinity of the resulting mutant particle, thus providing for the deficiency of the AB or CD loop in the teachings of Vigne et al., and providing the motivation to introduce mutations in the AB or CD loop.” (Office Action, page 5.) However, Applicants respectfully submit that the references alone or in combination do not teach all of the elements of amended claim 58, namely a modified adenovirus fiber in which modification is a mutation, insertion or replacement of at least one amino acid in a fiber shaft  $\beta$ -repeat corresponding to the last full  $\beta$  repeat, and wherein the fiber further comprises a modification in the AB loop or the CD loop of the fiber knob, wherein the fiber knob modification is selected from the group consisting of K01 and K012, whereby binding of the modified fiber to CAR is reduced.

Accordingly, Applicants respectfully submit that the cited references, either alone or in combination, do not teach each and every limitation of the claimed invention. As such, even if

one of skill in the art were to combine the cited references, one of skill in the art would not arrive at the adenovirus of the claimed invention. Withdrawal of the rejection is respectfully requested.

Claims 58 and 69-71 stand rejected under 35 U.S.C. §103(a), as allegedly being unpatentable over Vigne *et al.*, (supra) in view of Hallenbeck *et al.* (US Patent Appln. Pub. No. 2002/0137213). As claims 69-71 have been canceled, the rejection as applied to these claim is rendered moot. Applicants traverse the rejection as it applies to the pending amended claim.

The Office Action alleges that that Vigne teaches “targeted adenovirus vectors for delivery of heterologous genes, wherein modifications of the internal sites of the adenovirus fiber protein that include short targeting peptides fused to the C-terminus of the fiber protein, or the fiber HI loop (knob) target the modified adenoparticles to specific cell types,” citing the title and abstract (Office Action dated 11/28/07 at p. 5). The Action further alleges that Vigne teaches that the fiber protein may be modified to have a shorter shaft or may be replaced with the shaft of another serotype, but acknowledges that Vigne does not specifically describe the K01 fiber knot mutation. The Action then supplies Hallenbeck in an attempt to cure the deficiencies identified in the primary reference. However, Applicants respectfully submit that the references alone or in combination do not teach all of the elements of amended claim 58, namely a modified adenovirus fiber in which modification is a mutation, insertion or replacement of at least one amino acid in a fiber shaft  $\beta$ -repeat corresponding to the last full  $\beta$  repeat, and wherein the fiber further comprises a modification in the AB loop or the CD loop of the fiber knob, wherein the fiber knob modification is selected from the group consisting of K01 and K012, whereby binding of the modified fiber to CAR is reduced.

Accordingly, Applicants respectfully submit that the cited references, either alone or in combination, do not teach each and every limitation of the claimed invention. As such, even if one of skill in the art were to combine the cited references, one of skill in the art would not arrive at the adenovirus of the claimed invention. Withdrawal of the rejection is respectfully requested.

**Rejection under 35 U.S.C. §103(a)**

Claims 58 and 80-82 are rejected under 35 U.S.C. §103(a), as allegedly being unpatentable over Vigne et al. (U.S. Patent No. 6,911,199) in view of Havenga et al. (U.S. Patent Publication No.: 2003/0017138). Applicants traverse the rejection as it applies to the pending amended claim.

The Office Action alleges that that Vigne teaches “targeted adenovirus vectors for delivery of heterologous genes, wherein modifications of the internal sites of the adenovirus fiber protein that include short targeting peptides fused to the C-terminus of the fiber protein, or the fiber HI loop (knob) target the modified adenoparticles to specific cell types,” citing the title and abstract (Office Action at p. 7). The Action further alleges that Vigne teaches that the fiber protein may be modified to have a shorter shaft or may be replaced with the shaft of another serotype, but acknowledges that Vigne does not specifically describe the serotype D Ad37 virus having the sequence set forth in SEQ ID NO: 48. The Action then supplies Havenga et al. in an attempt to cure the deficiencies identified in the primary reference. The Action alleges that it would have been *prima facie* obvious for one of skill in the art to combine the teachings of Vigne et al. and Havenga et al. to substitute or modify the last full repeat of the fiber shaft of a serotype Ad 37 virus in a retargeted adenoviral vector. However, Applicants respectfully submit that the references alone or in combination do not teach all of the elements of amended claim 58, namely a modified adenovirus fiber in which modification is a mutation, insertion or replacement of at least one amino acid in a fiber shaft  $\beta$ -repeat corresponding to the last full  $\beta$  repeat, and wherein the fiber further comprises a modification in the AB loop or the CD loop of the fiber knob, wherein the fiber knob modification is selected from the group consisting of K01 and K012, whereby binding of the modified fiber to CAR is reduced.

Accordingly, Applicants respectfully submit that the cited references, either alone or in combination, do not teach each and every limitation of the claimed invention. As such, even if one of skill in the art were to combine the cited references, one of skill in the art would not arrive at the adenovirus of the claimed invention. It is a well settled principle that if an independent claim is found to be novel and nonobvious over the prior art, the more narrow dependent claims must necessarily also be found to be novel and nonobvious over the same prior art. With regard

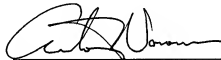
to the rejection of claims 80-82, because each of these claims depend from independent claim 58, it is respectfully submitted that since a rejection based on 35 U.S.C. 103 cannot be maintained with respect to the independent claim, it follows that a rejection based upon 35 U.S.C. 103 can neither anticipate nor render obvious dependant claims 80-82. Withdrawal of the rejection is respectfully requested.

**Conclusion**

In view of the foregoing amendments and the remarks, it is submitted that the claims are in condition for allowance, and a notice to that effect is respectfully requested. The Examiner is invited to contact Applicants' undersigned representative if there are any questions relating to this case.

The Commissioner is hereby authorized to charge \$130.00 as payment for the One-Month Petition for Extension of Time fee, large entity, to Deposit Account No. 07-1896. Additionally, the Commissioner is hereby authorized to charge any other fees associated with the filing submitted herewith, or credit any overpayments to Deposit Account No. 07-1896 referencing the above-identified attorney docket number.

Respectfully submitted,



Antony Novom, J.D.  
Registration No.: 45,517 for  
Lisa A. Haile, J.D., Ph.D.  
Registration No.: 38,347  
Telephone: (858) 677-1456  
Facsimile: (858) 677-1465

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DLA PIPER LLP (US)  
4365 Executive Drive, Suite 1100  
San Diego, CA 92121-2133  
**USPTO CUSTOMER NO.: 28213**